Development Of Application for Education Model And Healthy Prenatal Yoga

Ni Made Dewianti\textsuperscript{a,b}, Stang\textsuperscript{c}, Sukri Palutturi\textsuperscript{d}, Masyita Muis\textsuperscript{e}, Nyoman Mangku Karmaya\textsuperscript{f}, Arsunan Arsin\textsuperscript{g}, Indar\textsuperscript{d}, Suriah\textsuperscript{h}

*Corresponding author.
Email Address: dewianm19k@student.unhas.ac.id
\textsuperscript{a}Polytechnic of Health Kartini Bali
\textsuperscript{b}Doctor Program, Faculty of Public Health, Hasanuddin University, Makassar,
\textsuperscript{c}Department of Reproduction Health, Faculty of Public Health, Hasanuddin University Makassar,
\textsuperscript{d}Department of Administration Health Policy, Faculty of Public Health, Hasanuddin University, Makassar;
\textsuperscript{e}Department of occupational health and safety, Faculty of Public Health, Hasanuddin University Makassar
\textsuperscript{f}Faculty of Public Health Udayana University
\textsuperscript{g}Department Epidemiology, Faculty of Public Health, Hasanuddin University.
\textsuperscript{h}Department Promotion Section Faculty of Public Health, Hasanuddin University.

Abstract

Introduction: The selection of the type of delivery is adjusted to the condition of the mother and fetus. Currently, many pregnant women choose to have an operative delivery (SC) not because of complications but because of fear and anxiety in standard delivery, shorter CS delivery time, and aesthetic reasons. Lack of access to information about the choice of delivery method is one of the factors causing the lack of knowledge of pregnant women about the choice of delivery method. Objective To develop an application-based educational model and prenatal yoga

Method: Qualitative exploratory study is used to develop the model by conducting in-depth interviews with six pregnant women and a focus group discussion (FGD) of 6 people from among obstetricians, midwives, and IT experts.

Results: Application for education and prenatal yoga might be created to reduce cesarean delivery.

Conclusion: Application for education was created based on the interview results on educational materials for pregnant women and prenatal yoga through video on the application.

Keywords: Pregnant women, Application-based education, Prenatal yoga

Source of funding: This research was funded by the Directorate of Research and Community Service (DRPM).

Appreciation

The authors would like to convey their appreciation to the Directorate of Research and Community Service (DRPM), which has facilitated this research in the form of funding. We would like to extend our gratitude to all parties that have supported this research.

Conflict of Interests

There is no conflict of interest.
I. INTRODUCTION

Childbirth is the process of expelling conception product to the outside world. The type of childbirth chosen is the standard delivery, delivery with intervention, and surgery (1). The selection of the type of childbirth is based on the condition of the mother and fetus. Normal delivery is intended for a pregnant woman without pregnancy complications [1]. Delivery with intervention is chosen for pregnant women who experience difficulty during labour. At the same time, surgery is performed for pregnant women with complications and cannot go through expected delivery [2], [3]. Mortality of mothers is caused by some factors, among others, late reference, maternal disease history, and pregnancy complication [4]. One of the efforts is cesarean delivery. Nowadays, many pregnant women opt for cesarean delivery (CS) not because of difficulties but out of their fear and anxiety on normal childbirth, shorter duration of CS, and aesthetical-related reasons [3], [5]–[7].

The rise of CS delivery occurs worldwide based on the World Health of Organisation (WHO) report from 1998 until 2015 that shows a 49% increase [8]. The growth in developing countries in Europe reached 7.88%, as seen in Azerbaijan, Georgia, Serbia, Uzbekistan, and Tajikistan, while developed countries recorded a 2.36% increase in Finland and Canada [9].

Some factors affecting the high CS delivery are, among others, maternal factors, fetal factors, sociodemographic factors, health insurance factors, and health facility [3], [10]–[13]. The maternal factor that drives CS delivery is pregnancy complications such as breach pregnancy, pre-eclampsia, overdue pregnancy, and abnormalities in the placenta. Besides pregnancy complications, CS delivery is also driven by fear and anxiety of pregnant women and limited knowledge on childbirth method selection among pregnant women. Fetal factors that induce CS delivery are fetal distress and macrosomia. Sociodemographic factors of CS delivery include age, profession, and education level of mothers. The health insurance factor that encourages CS delivery refers to pregnant women with health insurance, either public or private, to choose CS delivery. The health facility factor that influences CS delivery is hospital policy on the fee of CS delivery and regular delivery that affects the financing and labour fees of medical staff [10], [11], [14], [15].

Interventions that may be performed to reduce the occurrence of CS delivery based on WHO recommendations are (i) Interventions for pregnant women, including education during pregnancy, relaxation training program, psychosocial-based prevention program from a partner, and psychoeducation for pregnant women who are afraid of pain during labour; (ii) Intervention for medical staffs is clinical guidance based on proofs and audit relative to the indication of CS delivery; and (iii) Interventions for health service facility is a collaboration model between midwifery care and financial strategy with financing reformation of health insurance [16].

Challenges that hinder pregnant women's care programs from decreasing CS delivery are the lack of knowledge among pregnant women on the childbirth selection method, noting the
education provided for them only around the condition of pregnancy, danger signs of pregnancy, and pregnancy preparation. Instruction is delivered conventionally through mother class, where expectant mothers obtain information by reading the Maternal and Child Handbook (MCH or KIA in Indonesian). There is no education delivered via the Android platform that pregnant women may use. Intervention to relieve fear and stress on pregnant women has not been done either.

Based on the preliminary research results, these authors would like to develop an education model based on application and prenatal yoga conducted in Denpasar city. Education is provided using an application that pregnant women should download on their smartphones. It contains material relative to danger signs of pregnancy, selection of childbirth type, the indication of CS delivery and side effects of CS delivery, and downsides of CS delivery, along with videos of prenatal yoga. Education on the application is provided twice a week.

Education that is given via an audiovisual platform may improve knowledge and behavior [17]. The strength of utilizing this application-based education is that educational materials in the application are delivered with audio and visual media, which increase material comprehension to around 60% until 80% compared to audio-only or visual-only [18]–[20]. Prenatal yoga, which may be done at home and in the prenatal yoga community, makes it easier for pregnant women. This research is expected to provide solutions relative to the provision of education for pregnant women. The research question may be formulated as follows: how creating an application-based education model and prenatal yoga. Both of them could decrease the occurrence of cesarean delivery with the research objective of creating an educational application that pregnant women could use to reduce the cesarean delivery occurrence.

II. Method
The method used in this research is qualitative with an exploratory approach. The qualitative method was used to dig in-depth information from informants [21]. In-depth interview with pregnant women was conducted to acquire information on the materials that they required. FGD among obstetricians, midwives, and IT experts to design an application that pregnant women could use to reduce cesarean delivery.

Research design
The content formulation of application-based education and prenatal yoga was done through in-depth interviews with pregnant informants. The consultation sought to know how pregnant women obtain information on pregnancy, selection of childbirth type, and prenatal yoga. After the application contents had been formulated based on the in-depth interview with informants, socialization of the application-based education model and prenatal yoga was conducted. Socialization on contents of the model was participated by obstetricians, midwives, and IT experts after the contents of the model were formulated. Creating design and features on application-based education model and prenatal yoga was done by the IT
team. The development of an application-based education model and prenatal yoga was conducted through Focus Group Discussion among obstetricians, midwives, and IT experts.

**Settings and Informants**
This research was done in East Denpasar and South Denpasar subdistrict. Informants in this research were pregnant women who have experienced childbirth through standard delivery or cesarean delivery. Focus group discussion was conducted and participated by obstetricians and midwives who have performed pregnancy examinations and IT experts capable of creating an application program. The number of pregnant informants was six people, and there were two obstetricians, two midwives, and 2 IT experts, making a total of 12 informants.

**Data Collection Method**
Obtain data in this research; an in-depth interview with pregnant women was conducted by asking open-ended questions. The interview guidelines were half-structured and had been tested. Pregnant women were given as much time as they needed to tell their experience of doing pregnancy examinations and answering the questions based on the interview guidelines. Focus Group Discussion was carried out based on the FGD guidelines. The interview and FGD results were recorded using a digital recording tool and subsequently transcripted using the computer.

**Ethics Consideration**
The Ethical Committee of Hasanuddin University ensures there is no reason to object to this research. All informants who were interviewed had given written consent. The description of the research objective had been created when the informants were chosen. The research objective was written on the research consent form and was delivered verbally during the interview process. Informants have the right to withdraw their consent without any consequences. Informants used initials, and the secrecy of the informants was kept well.

**Data Analysis**
The qualitative data analysis process used thematic data analysis, which identifies patterned themes in a phenomenon with five stages as follows: data reduction, data presentation, data analysis, conclusion, and verification, as well as narration on analysis results.

**III. Results**
From in-depth interviews with pregnant women, some topics were identified.

**Experience of Pregnant Women**
Relative to the experience of pregnant women on information relating to the selection of childbirth type, many informants conveyed that they obtained such information from medical staff. They could not have many discussions with medical staff due to time limitations during pregnancy examinations. The lack of data on the selection of childbirth type caused anxiety and fear in pregnant women in facing the process of childbirth labour. In terms of information
available in the KIA book, pregnant women shared that they rarely read the KIA book as they did not have much time. Pregnant women expected information on selecting childbirth type to be obtainable via their handphones, considering the high utilization of handphones.

**Information around pregnancy via application**
The majority of pregnant women agreed that information around pregnancy was obtainable via application in handphone. Using the application, pregnant women could search for the required information through the application. Given the advancement of technology, pregnant women wanted to acquire easy access to information.

**Prenatal yoga**
Half of the pregnant women said that they were benefited from doing prenatal yoga. However, access to acquire such service was quite tricky. Pregnant women must pay an instructor with a pretty expensive fee to do prenatal yoga. Therefore, prenatal yoga could not be done regularly considering the limited fund of pregnant women and health care to provide prenatal yoga. Pregnant women thought that prenatal yoga might be performed at home through video from the instructor on the movements of prenatal yoga. During the pregnancy period, pregnant women could only do prenatal yoga for six until ten times. It considered the benefits of prenatal yoga that could relieve stress on pregnant women and prepare them physically and mentally to face childbirth.

**Knowledge relating to Sectio Caesarea delivery**
The majority of pregnant women did not obtain information on cesarean delivery. They acquired information from pregnant women who had experienced cesarean delivery that such delivery did not cause any pain. Knowledge on the short-term and long-term impacts of cesarean delivery on mother and infant remained unknown.

**FGD Results**
From the results of FGD with obstetricians, midwives, and IT experts, a design of application may be used by pregnant women in obtaining education relating to the selection of childbirth type, cesarean delivery, and prenatal yoga that could be performed at home was made. Prenatal yoga could be done at home with the assistance of a video that is accessible via the application. The design of education prenatal yoga application to reduce the occurrence of cesarean delivery can be seen in Figure 1.1
Figure 1.1 Homepage

For first-time access to the application, the homepage would be shown (Figure 1.1). There are two navigation buttons, i.e., Login if the user already had an account or had username and password, and Register for users who did not have an account or had not registered.

Figure 1.2 Account Registration Page

Users who did not have an account were required to register on the registration page (Figure 1.2). There are three text boxes to input the name of the user, username and email address that will be used, and the register button. When clicking the Register button, the system would automatically send a password to the user's email

Figure 1.3 Login Page

If users already had an account or had a username and password, they would access the Login page (Figure 1.3). They input their username and password, then click the login button. If successful, the users would be directed to the Main Page (1.5). For first-time use, the user was required to fill in the data of their pregnancy on the Pregnancy Data Page (Figure 1.4).
On the Pregnancy Data page (Figure 1.4), there was the button on the date of the First Day of the Last Menstruation (FDLM) and another button for Estimated Due Date (EDD). It well as information text on the estimated gestational age that would be shown automatically after filling out the FDLM. EDD would be automatically filled after the user filled out FDLM. The save button is used to lock the data that had been filled.

There were four navigation buttons on the main page (Figure 1.5), i.e., article, material, midwifery consultation, and account user. By clicking the article navigation button, the user could go to the Article page (Figure 1.6)
On the Article Page (Figure 1.6), there was general information on pregnancy. The material Page navigation button was used to the Material Page that contained pregnancy material on the first, second, and third trimesters. (Figure 1.7)
On the Material page, users could access materials based on their gestational age. If the gestational age of the user was within the second trimester, then the user could only access the material page for trimesters I and II. On the material page of a trimester, the material would be presented in video and text. (Figure 1.8)

By clicking the Midwife Consultation navigation button, the user would be directed to the WhatsApp application as a communication platform between the user and the selected Midwife. Therefore, the WhatsApp application became a required supporting application of the Dewi Bidanku application.

Lastly, the Account User button was the page for users to change or update their data such as gestational age, email address, and password, and sign out from the application (Figure 1.9).
The user clicked on the Update Gestational Age navigation button to change gestational age to the Pregnancy Data page (Figure 1.4). If users want to change their email address, they should enter the new email address on the Email Textbox and click the Update Account navigation button. Meanwhile, to change the password, the user should click the Change Password navigation button and a password change dialogue box. The Logout navigation button should be pressed if users want to exit or close the Dewi Bidanku application.

**IV. Discussion**

The experience of pregnant women in obtaining information about pregnancy was still felt to experience obstacles. Experience is defined as something that has been encountered (lived, felt, borne) (KBBI, 2005). Experience might also be interpreted as an episodic memory, which refers to a memory that receives and stores events that occur or are experienced by individuals at a particular time and place, that serves as a reference of autobiography. Experience is an inseparable part of day-to-day life. Experience is precious for every human
being, and experience could be given to anyone to be used and to be a guidance and lesson [22], [23].

Experience is consists of the immediacy of experience and subjective experience. The immediacy of experience is defined as a new experience encountered by someone. New experiences would shape a person's perception of an event or situation. To formulate a conscious perception of the meaning and feelings of one's experience, it requires the ability to examine what participants think, see, hear and feel while interacting with the event or situation (Erica et al. 1, 2014; Karlström, Nystedt and Hildingsson, 2015; Henderson and Redshaw, 2016).

A person's life experience, when it is reiterated, could be in the form of responses, reactions, interpretations, self-criticism, even self-defence from the outside world. Life experience is also a complete picture of a person's life in the past regarding black and white, good and bad, which might be re-expressed through an effort to trace that life experience [22].

The results of research on women's long-term memory showed that the experience during childbirth would be a memory that remains very clear and deep. This experience could later affect a woman's readiness to face her next delivery. Some women had a positive, enjoyable, and even uplifting childbirth experience when they talked about it. In contrast, others remembered it with shame, anger, regret, or withdrawal [22], [27]–[29]. Midwives had an essential role in creating a pleasant experience for women during pregnancy and childbirth. Midwives must be able to express a strong belief in a woman's ability to give birth. Midwives were required to inform, encourage and provide tools to enable deliveries. Hence it was important for midwives to invite partners to be part of the team, where everyone worked together for the benefit of the expectant mother and child [30].

Prenatal yoga could benefit childbirth preparation because it taught the mother to receive signals from her body and maximize her natural potential [31], [32]. As many as 7% of women reported being practising yoga during pregnancy. There was an increase in pregnant women's interest in doing yoga, which led to the rise in the prevalence of yoga utilization. Yoga is an exercise that pregnant women with low risk could perform and positively impacts pregnant women. Yoga could be done in a particular yoga class for pregnant women or at home [33]–[35].

Regarding knowledge on cesarean delivery, it could be understood that many pregnant women did not understand the selection of the caesarean section delivery method [36]. Sectio Caesarea (SC) was introduced in clinical practice as a life-saving procedure for both mother and infant. As another procedure with complexity, its utilization followed a worldwide pattern of inequality in healthcare: underused in low-income settings and inadequate or even unnecessary use in middle and high-income settings [9]. Several studies have shown an inverse relationship between the incidence of CS. On the other hand, the incidence of cesarean delivery above a certain threshold had not shown any additional benefit to the mother or infant. Some studies have even shown that high cesarean delivery rates might be associated with negative consequences in maternal and child health [37].
Research Limitation

Firstly, qualitative data collection and content analysis were based on papers in their original language to portray and interpret the contents correctly. Translation on the descriptions and the contents’ interpretations may distort or transform its initial meaning. Secondly, this research was performed in the urban area; hence it could not represent pregnant women in the rural area.

V. Conclusion

Based on the interview results with pregnant women, it is understood that there is a need for pregnant women to obtain information on pregnancy, specifically on the selection of childbirth type and cesarean delivery. Ease access to information for pregnant women is highly required. During the FGD, an application design that pregnant women may use was made to decrease the occurrence of caesarean delivery. Application for education was made based on the interview results on the need for educational materials for pregnant women and the conduct of prenatal yoga using video on the application.

References


